

2-4 Writing Linear Equations

Forms

$$Ax + By = C \quad \text{standard form}$$

$$y = mx + b \quad \text{slope-intercept form}$$

$$y - y_1 = m(x - x_1) \quad \text{point-slope form}$$

Find the equation of a line passing through the given point, with the given slope. (in slope-intercept form)

$(-3, -6)$

$m = 2$

$$y = mx + b \quad \text{plug in } m$$

$$y = 2x + b \quad \text{plug in pt.}$$

$$-6 = 2(-3) + b$$

$$0 = b$$

$$\boxed{y = 2x}$$

Sep 26-2:52 PM

Oct 1-11:16 AM

Find the equation of a line passing through the given points. (In slope-intercept form)

$(6, -3)$ $(8, -9)$

$$m = \frac{-3 - (-9)}{6 - 8} = \frac{6}{-2} = -3$$

$$m = -3$$

$$y = -3x + b$$

$$-9 = -3(8) + b$$

$$15 = b$$

$$\boxed{y = -3x + 15}$$

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Find the equation of a line passing through the given points. (In point-slope form)

$(.5, 7)$ $(-.5, 4)$

$$m = \frac{7 - 4}{\frac{1}{2} - (-\frac{1}{2})} = 3$$

$$m = 3$$

$$y - y_1 = m(x - x_1)$$

$$\boxed{y - 7 = 3(x - \frac{1}{2})}$$

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Write the equation of a line \perp to $2x + y = 5$ and passing through $(1, -7)$.

$$m = \frac{1}{2}$$

$$(1, -7)$$

$$y = -2x + 5$$

$$m = -2$$

$$y + 7 = \frac{1}{2}(x - 1)$$

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Write the equation of a line \parallel to $3y - x = 4$ and passing through $(3, 10)$.

$$y = \frac{1}{3}x + \frac{4}{3}$$

slope -int

$$y = \frac{1}{3}x + b$$

$$10 = \frac{1}{3}(3) + b$$

$$9 = b$$

$$y = \frac{1}{3}x + 9$$

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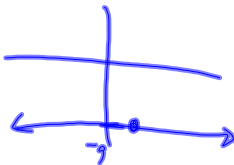
Write the equation of a line \perp to the line containing $(4, 3)$ and $(4, 8)$ and passing through $(2, -9)$.

$$m = \frac{8-3}{4-4} =$$

undefined
vertical

horizontal

$$y = -9$$



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Linear variation

y varies linearly as x (y depends on x)

$$y = mx + b$$

(independent variable, dependent variable)

Oct 1-11:20 AM

1. The present population of Whitehall is $47,000$. The population increases by 550 each year. Express the population (P) in (t) years. Use the function to find the population in 30 years. In 38 years.

$t=0$

$$P = 550t + 47000$$

$$P = 550(30) + 47000$$

30yrs, 63500 38yrs, 67900

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2. A telephone company charges \$12 per month plus \$.10 for each local call. Express the monthly bill (B) in terms of the number of calls (c). What would the bill be if there were 47 local phone calls?

$$B = .1c + 12$$

47 calls \$16.70

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3. A ranger calculates there are 6,000 deer in a preserve. She also estimates that 75 more deer die than are born each year. How many deer will be in the preserve in x years? In how many years will the preserve be empty?

$$D = -75x + 6000$$

$$0 = -75x + 6000$$

$$80\text{yrs} = x$$

Oct 1-11:18 AM

HW p78-79
 #s 13, 14, 17-19, 21, 29-35odd,
 36, 38
 and complete word problems

Oct 1-11:19 AM